

# Model S100

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**Subwoofer**

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## User manual



# TABLE OF CONTENTS

<b>1.</b>	<b>IMPORTANT SAFEGUARDS</b> .....	<b>3</b>
<b>2.</b>	<b>WELCOME</b> .....	<b>4</b>
2.1	WORLD WIDE WARRANTY	
<b>3.</b>	<b>DESIGN SAFETY</b> .....	<b>4</b>
<b>4.</b>	<b>FEATURES OF THE S100 SUBWOOFER</b> .....	<b>5</b>
4.1	CONTROL PANEL	
4.2	CONNECTIONS	
<b>5.</b>	<b>CONNECTING THE S100 TO YOUR SYSTEM</b> .....	<b>6</b>
5.1	HIGH LEVEL INPUTS	
5.2	LOW LEVEL INPUTS	
<b>6.</b>	<b>ADJUSTING THE S100</b> .....	<b>7</b>
<b>7.</b>	<b>OPERATIONAL GUIDELINES</b> .....	<b>7</b>
<b>8.</b>	<b>CABINET CARE</b> .....	<b>8</b>
<b>9.</b>	<b>SPECIFICATIONS</b> .....	<b>8</b>
<b>10.</b>	<b>LIMITED WARRANTY REGISTRATION</b> .....	<b>9</b>
<b>11.</b>	<b>SUBWOOFER FAQ</b> .....	<b>10</b>

# 1. IMPORTANT SAFEGUARDS

**Please observe all the following safeguards when using your S100 subwoofer.**

1. Save these instructions for future use.
2. Read all of these instructions.
3. Unplug from the wall socket before cleaning.
4. Do not use abrasive cleaners. Use a soft, damp cloth for cleaning.
5. Verify power supply voltage setting prior to initial use.
6. Do not allow anything to rest on the power cord.
7. Position the power cord out of all walkways.
8. Unplug the unit when it will not be used for a long period of time.
9. Never spill any kind of liquid on the unit.
10. Do not attempt to service the unit yourself. Refer all servicing to your dealer.
11. Refer servicing to your dealer under the following conditions:
  - A. When the power cord or plug is damaged.
  - B. If liquid has been spilled onto the unit.
  - C. If the unit does not operate properly by following the operating instructions.
  - D. If the unit has been dropped and damaged.
  - E. When the unit exhibits a drastic change in performance.
12. This item is heavy (18.6 kg). Take all precautions when moving or relocating the unit.

## 2. WELCOME

Thank you for buying the Final Sound S100 subwoofer. The S100 is carefully hand built using the finest materials available and is designed for maximum performance. This manual contains important safety information as well as helpful advice and should be carefully studied before use.

### 2.1 World Wide Warranty

In addition to any local Warranty, Final Sound offers a 1 year conditional Worldwide Warranty to the end user. Please see your dealer for any warranty service.

#### **< PLEASE FILL IN YOUR WARRANTY TERMS – THIS IS OUR WARRANTY STATEMENT >**

Final Sound warrants its Subwoofers to be free from defects in material and workmanship for a period of 1 year from the date of purchase. Final Sound and/or its designated representatives shall have all final determination about the validity of a warranty claim.

This warranty shall not apply to any product that has been subject to misuse, neglect, accident, or abnormal conditions of operation, including but not limited to use in professional sound/PA systems. Burnt voice coils and broken tinsel leads are not covered as warrantable items. This warranty is limited to the original owner, and is not transferable.

Final Sound's obligation under this warranty is limited to repairing, replacing or refunding the original purchase price (exclusive of shipping charges), at Final Sound's option, any product returned to the factory within 1 year of the date of purchase, provided that Final Sound determines that the unit is defective and has been used in compliance with the terms of this warranty.

For products that failed due to manufacturing defects Final Sound will reimburse shipping costs. Shipping costs will be limited to delivery by UPS Ground. Costs incurred above and beyond these levels will not be reimbursed.

If the failure has been caused by misuse, neglect, accident, or abnormal conditions of operation, repair or replacement will be billed at a nominal cost, pursuant to customer agreement to such repair or replacement. No shipping costs will be reimbursed.

The foregoing warranty is exclusive and in lieu of all other warranties, expressed or implied, including, but not limited to, any warranty of merchantability or fitness for any particular purpose. Final Sound shall not be liable for any special, incidental or consequential damages, whether in contract, tort, or otherwise.

## 3. DESIGN SAFETY

This subwoofer is supplied with a removable IEC power cord. Use only IEC power cords designed for the power receptacle of your country, and with a minimum current rating of 2.5A.

For 220V operation, a 1.5A fuse is required. For 110V operation, a 3A fuse is required. In both cases the fuse must be rated for 250V operation. Use only the rated sized fuses. Do not use without the fuse cover in place. If the fuse holder is damaged or worn, see your dealer for replacement.

## 4. FEATURES OF THE S100 SUBWOOFER

The S100 subwoofer has a wide variety of features, including:

- Dedicated volume control
- Switch able phase control
- Variable low pass crossover (40 Hz to 240 Hz)
- Auto turn-on
- High and low level inputs
- Switch able power supply (110/220V user selectable)

The cabinet of the S100 uses 19 mm thick high-density composite walls. The cabinet is finished in a high gloss acrylic piano black finish.

The amplifier is a 100W RMS/200W peak class A/B design. It is not a switching/class D amplifier, and as such has a very low noise floor. It features a large power transformer, oversized power supply capacitors, and a large external aluminum heat sink to ensure longterm cool operation.

The driver is a very long throw 20 cm diameter driver with a 38 mm diameter voice coil, heavy gauge cast aluminum basket, 2500-gram motor system with a 1000-gram magnet, epoxy-reinforced paper pulp cone, and progressive fabric spider. It features a patent-pending XBL<sup>2</sup>™ motor design with allows for a linear 24 mm of throw, and over 36 mm of peak-to-peak excursion. The linear motor strength curve from this motor ensures extremely low distortion and compression over the full operating bandwidth, as well as a very high transient response.

### 4.1 Control Panel

The control panel of the S100 is labeled for easy identification and use. The most commonly adjusted controls are located the top of the amplifier, while the least accessed connections are located at the bottom.

The volume control allows setting the gain of the built-in amplifier to match your main speakers. A total range of 60 dB is provided, allowing integration with nearly any audio system.

Phase can be switched between 0 and 180 degrees. Phase adjustment is critical to get proper subwoofer/speaker integration.

The crossover frequency has a roll-off range from 40 Hz to 250 Hz. For use with Final Sound electrostatic panels the crossover is typically set to the lowest frequency the panel can reproduce.

### 4.2 Connections

The auto-on switch will place the amplifier in low-power mode until an input signal is detected on the low or high-level inputs. When an input signal is detected the amplifier will automatically turn on, and will stay on for approximately 10 minutes after the input signal is removed.

The line level inputs are standard RCA connectors, and are compatible with all consumer electronics. The amplifier will automatically sum the two input signals together to create a mono bass signal. In the event an LFE/SUB-OUT signal is fed to the subwoofer, either line level input may be used.

The high level inputs are 3 way binding posts, and are compatible with all consumer amplifiers. The input impedance of the high level inputs is high enough to not draw significant amounts of power or load down the output of any power amplifier. Small gauge wire may be used to provide the input signal.

The power connection is a standard IEC connector with a built-in fuse holder. The power supply cord must be plugged into the connector before the power supply cord is plugged into the wall socket.

The fuse is contained inside the IEC connector. The small tab inside the connector must be depressed allowing the fuse holder to be slid out. The power supply cord cannot be used when the fuse holder is extended or removed.

## 5. CONNECTING THE S100 TO YOUR SYSTEM

### ***ALWAYS SWITCH OFF YOUR SYSTEM BEFORE CONNECTING ANY WIRES!***

To increase the versatility of connecting up, the S100 has various separate high and low level inputs.

#### **5.1 High Level Inputs**

Make sure your entire system is powered off.

Use a second set of speaker wires from your amplifier output to connect to the S100.

Connect the right amplifier output to the right high level input; connect the left amplifier output to the left high level input.

Connect the positive amplifier output to the red binding post; connect the negative amplifier output to the black binding post.

Ensure that the speaker wire is completely seated in the amplifier outputs and the subwoofer's high level inputs before turning on any component.

#### **5.2 Low Level Inputs**

Make sure your entire system is powered off.

For stereo connection, use a pair of RCA cables.  
For mono/LFE/SUB-OUT use a single RCA cable.

Connect one end of the RCA cables to the proper output of your receiver/preamplifier/processor.

Connect the other end of the RCA cables to the line level inputs of the subwoofer.

Ensure that the RCA cables are fully seated in all connectors before turning on any component.

## 6. ADJUSTING THE S100

Set the S100 in the desired location.

Connect the S100 to the stereo system (chapter 5).

Set the volume control to a minimum, the crossover frequency to 40 Hz, and the phase to 0 degrees.

Turn on the stereo with music you are familiar with.

Turn up the subwoofer volume to a level that matches the main speakers.

Adjust the phase control to a maximum bass output.

Readjust the volume control.

Turn up the crossover frequency until the location of the bass becomes obvious, or the bass from the subwoofer overwhelms that from the main speakers.

Readjust the volume control.

If you have a dedicated stereo/surround setup guide/disc, refer to the directions included in it.

Note that you may need to try more than one location to reach optimum results.

## 7. OPERATIONAL GUIDELINES

As with all Final products, the S100 is designed to provide the highest level of performance. However, the S100 still has limits that should be observed.

If the S100 begins to overload or heavily distort, turn down the bass or volume.

If the S100 overwhelms the output of the main speakers, turn down the volume.

If the main speakers sound strained, raise the S100 crossover frequency.

If the bass sounds loose or dislocated, adjust the phase or placement of the subwoofer until the problem disappears.

Placement of the subwoofer within the room is critical to the operation of the S100. Recommended locations include the center of the front wall, either front corner, or the center of the side walls.

If the S100 malfunctions, turn the subwoofer off and on. If the problem persists, contact your dealer for additional troubleshooting.

## 8. CABINET CARE

The finish on the S100 is a high strength, scratch-resistant acrylic. However, as with all fine furniture finishes the cabinet can still be scratched.

Always unplug the S100 prior to cleaning.

Do not clean or dust the cabinet with any abrasive cleaner. Use only a fine quality spray or wipe-on furniture/dust cleaner.

Do not use any abrasive rag or scrubber. Use only a lint-free clean cloth.

Never use a liquid to clean the cabinet or amplifier.

## 9. SPECIFICATIONS

Size	30cm cube, with 5cm high feet
Weight	16 kilograms
Anechoic Frequency Response	30 Hz to 250 Hz, $\pm 3$ dB
In-Room Frequency Response	Typically 25 Hz to 250 Hz, $\pm 3$ dB
THD	Less than 3% THD at 94 dB SPL from 30 Hz and up
Maximum Output	110 dB SPL in room
Amplifier Type	Discrete class A/B with linear power supply
Volume Adjustment	60 dB of range
Crossover Frequency	40 Hz to 250 Hz
Crossover Type	2 <sup>nd</sup> order Butterworth (12 dB/octave, $Q=0.707$ )
Subsonic Filter	2 <sup>nd</sup> order Butterworth at 22 Hz
Phase Adjustment	Selectable between 0 to 180 degrees
Power Output	100W RMS/200W Peak
Power Consumption	200W RMS on/12W in standby
Low Level Input Impedance	20 k $\Omega$
High Level Input Impedance	2 k $\Omega$
Effective Internal Volume	22 liters sealed with 400 grams of polyester stuffing
Driver	20 cm long throw driver with XBL <sup>2</sup> motor technology

## 10. LIMITED WARRANTY REGISTRATION

Your FINAL SOUND subwoofer is provided with limited 1-year warranty. The limited warranty will not be honored when the product has been used or handled other than in accordance with the instructions in the user manual. We thank you and wish you great enjoyment with your new Final Sound product.

Name: \_\_\_\_\_  
Email: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_  
Country: \_\_\_\_\_  
Authorized Final Sound dealer: \_\_\_\_\_  
Salesperson's Name: \_\_\_\_\_

Please fill in for warranty registration the serial number of the unit you have bought.  
(Serial number appear on labels at the back of the product)

1 Final S100 Subwoofer (e.g. S-100-A001 ): S100-A \_\_\_\_\_

To improve our products and customer service, we would greatly appreciate your answers to the following questions.

Title or profession: \_\_\_\_\_ Age: \_\_\_\_\_  
How did you find out about Final Sound? \_\_\_\_\_  
Advertisement in \_\_\_\_\_  
Relations/friends \_\_\_\_\_  
Internet: \_\_\_\_\_  
Other: \_\_\_\_\_

What kind of amplifier do you use?

Brand: \_\_\_\_\_  
Type: \_\_\_\_\_

If you have any comments on our products and services, please use the back of the form.  
Thank you very much for taking time to complete in this form and sending it to:

Final Sound Solutions B.V.  
Eisenhowerweg 8D  
5466 AC Veghel  
The Netherlands

## 11. SUBWOOFER FAQ

### How can I connect my subwoofer and avoid hum and noise?

Hum and noise in audio systems is caused by many interference sources. Most likely is the existence of a so-called ground loop. If there is more than one ground connection path between two pieces of equipment, a ground loop occurs. You can identify ground loop problems because they mostly produce a 50Hz or 60Hz hum into the system. If the hum is 100Hz or 120Hz, without the 50/60Hz part, there are probably other sources of interference. Think about light dimmers, heavy equipment on the same power group or strong incoming rfi/emc pollution. If hum and noise problems are persistent, the best advice is to consult your dealer. These problems can be pretty complex in daily life. In this FAQ, we cannot describe all the existing knowledge about ground loops in depth. We can provide you with some basic solutions to prevent hum and noise problems.

- 100/120Hz hum can be avoided by feeding the equipment using a 'clean' AC line. So, don't connect light dimmers, refrigerators, vacuum cleaners, fluorescent lightning and other current hungry and interference inducing equipment to the same AC-group or wall-outlet.
- Don't put all kinds of wireless equipment, including cordless cell phones and remote controlled children's toys in the neighborhood of audio and video gear.
- Use shielded AC power cables to avoid incoming rfi/emc interference. Sources can be radar equipment, transmitters for broadcast or cellular communications or your neighbor's wireless LAN.
- Mains transformers cause an AC magnetic field around them. If you stack equipment, or if you position gear close together, the magnetic fields can be coupled and hum may result.
- Magnetic fields can also be coupled to cables. So isolate signal cables, AC cables and cables transporting control signals from each other. If there is a need to cross signal cables and power cables, cross with a 90-degree angle.
- Be sure that all the cables and connectors are in good shape, and that you made the connections according to the dealer's instructions.
- Mains voltage quality problems can cause hum and noise. Sometimes, the sine wave is distorted and the line will contain harmonics. Please consult your dealer about using isolation transformers, mains filters and AC power stabilizers and conditioners.
- A typical ground loop problem can occur when two interconnected pieces of equipment (Fl. cd player and amplifier) are plugged into grounded AC wall outlets at separate locations. The signal ground is connected to earth in each of them. Try to use 'single-point grounding'. Connect your equipment to the same wall outlet.
- Using the subwoofer's high-level input, can present a new league of potential hum problems. It's known that some amplifiers in the market come with reversed loudspeaker connections. So, red is actually ground and the black terminal contains the 'hot signal'. When connecting to a subwoofer, hum may result. Try to reverse the connections (subwoofer 'off' and volume to minimum). Power the sub again and gently raise the volume. If hum still occurs, it's probably caused by some other phenomenon.
- Amplifiers with 'balanced' outputs can also be incompatible with the sub's high-level inputs. Transformer isolation at the amplifier's input side may be the right solution. Please consult your dealer.
- Problems may also occur when you connect the subwoofer, using its high-level inputs, in set-ups consisting of bi-amplified loudspeakers. Please consult your dealer.

### Is it possible to use multiple subs in my stereo or home theatre set-up?

Most professionals agree that using two subwoofers in a stereo set-up will provide you with better and more dimensional low frequency reproduction. Using more subwoofers will also be a remedy against acoustic problems and a way to accomplish a more even bass distribution in the listening room. In a stereo-system, you can connect each of the two subwoofers 'high level' to the left and right loudspeaker. Depending on your electronics, in case of a separate pre amplifier, it's sometimes possible to connect the subwoofer direct to the pre amplifier's rca low level output connectors. Use the corresponding subwoofer's low level rca input terminals.

Using multiple subwoofers in a home theatre set-up can be a little more challenging. From the single processor's LFE-output, it's simply possible to daisy chain subwoofers. It's also possible to connect one sub to the left and one to the right front loudspeaker, using the high level connection. Using this set up, it's most likely to adjust your processor's bass management features. In case of doubt, please ask your dealer's advice.

## **Do I really need a subwoofer?**

It depends on your tastes. For flat panel loudspeakers with a limited low frequency extension, you probably need a subwoofer. Especially if you like organ music, synthesizers and modern party music. Larger panels will extend towards 45Hertz. These will perfectly suit most middle of the road repertoire without need for a subwoofer. In a 5.1 or 7.1 home theatre system, a subwoofer is an undeniable part of the experience. When you can't live without the dynamic power, the physical impact and the low frequency extension a decent movie can provide, please run for a subwoofer. But, for different reasons, you can do without sub. The only thing you have to do, is to reconfigure the av receiver's bass management to route the lower frequencies to the front loudspeakers.

## **Should I unplug my subwoofer during lightning?**

Yes, but try to unplug the sub and the rest of your equipment before the lightning is straight above your house. Unplug the equipment physically from the AC-line. Switching it off or using the stand-by mode does not protect at all against lightning.

## **Do I need a separate amplifier for my subwoofer?**

Unless you buy 'passive' subwoofers: NO. Most subwoofers come with an inbuilt amplifier. Those 'active' subwoofers only need a low level (rca) of high-level connection with existing amplifiers.

## **Do I need separate subwoofers for music and home theatre?**

Basically, a really good subwoofer can provide optimal results for both applications. In daily live, most people feel the need for a larger sub in their home theatre, because of the visceral impact, that is inherent and part of the fun of watching movies. Apart from this, listening to music needs a different balance between the subwoofer and the rest of the system, than watching and listening to movies. Most av-processors will provide you with the opportunity to simply make small adjustments, using the remote control.

## **Can I clean my Final subwoofer?**

Yes, but first disconnect the AC-line. Clean only with a damp cloth. Never use cleansers or chemicals. Never leave a wet cloth on the surface of the cabinet.



Final Sound Solutions B.V.  
Eisenhowerweg 8D  
5466AC Veghel  
The Netherlands  
[www.finalsound.com](http://www.finalsound.com)